

Claims:

1. A method for the inhibition or reversal of the spread of a non wild type genetic trait in a non human population capable of sexual reproduction, the method comprising introducing sexually compatible individuals substantially homozygous for a wild type counterpart of the trait into the target population.
2. A method according to claim 1, wherein the trait confers a reduced level of fitness on individuals carrying that trait in either the heterozygous or homozygous form, in the absence of selective conditions for the trait.
3. A method for the inhibition or reversal of the spread of a genetic trait in a non human population capable of sexual reproduction, the method comprising introducing sexually compatible individuals substantially homozygous for a counterpart of the trait into the target population, the trait conferring a reduced level of fitness on individuals carrying that trait in either the heterozygous or homozygous form, or both, compared to individuals homozygous for the counterpart, other than under conditions selective for the trait.
4. A method for the inhibition or reversal of the spread of a genetic trait in a non human population capable of sexual reproduction, the method comprising introducing sexually compatible individuals substantially homozygous for a counterpart of the trait into the target population, wherein the individuals released into the target population carry a second trait which is dominant lethal or which results in reduced average fitness in at least one subsequent generation.
5. A method according to claim 4, wherein said average fitness associated with said second trait is not zero for the immediately subsequent generation.
6. A method according to claim 4 or 5, wherein the second trait confers a reduced level of fitness on at least a proportion of individuals carrying that trait in either the heterozygous or homozygous form.

7. A method for the inhibition or reversal of the spread of a non wild type genetic trait in a non human population capable of sexual reproduction, the method comprising introducing sexually compatible individuals substantially homozygous for the wild type counterpart of the trait into the target population, wherein the individuals released into the target population carry a second trait which is dominant lethal or which results in reduced fitness in at least one subsequent generation.

8. A method according to any of claims 4 to 7, wherein said second trait is substantially not linked to the counterpart

9. A method according to any of claims 4 to 8, wherein the second trait is suppressible by means of a genetic suppressor therefor to prevent or reduce expression of the trait in individuals carrying one or two copies of the suppressor, and wherein the introduced individuals are homozygous for both the second trait and said suppressor.

10. A method according to claim 9, wherein the suppressor is substantially not linked to the second trait.

11. A method according to claim 9 or 10, wherein the suppressor is linked to the counterpart of the trait to be inhibited or reversed.

12. A method according to any of claims 4 to 11, wherein the second trait acts as a dominant lethal under permissive circumstances therefor.

13. A method according to any of claims 4 to 12, wherein the second trait is selective for females.

14. A method according to any preceding claim, wherein the heterozygote form of the trait to be inhibited or reversed has an associated reduced level of fitness by comparison with the homozygotes in the presence of a toxin, wherein the trait is resistance to the said toxin.

15. A method according to any preceding claim, wherein the non human population is an insect population.

16. A method according to any preceding claim, wherein the members of the population are selected from the group consisting of:

Australian sheep blowfly (*Lucilia cuprina*)

New world screwworm (*Cochliomyia hominivorax*)

Old World Screwworm (*Chrysomya bezziana*)

Tsetse fly (*Glossina spp*)

Stable Fly (*Stomoxys calcitrans*)

Face Fly (*Musca autumnalis*)

Other *Musca* species (e.g. *Musca domestica*)

Horn Fly (*Haematoba irritans*)

Asian tiger mosquito (*Aedes albopictus*)

yellow fever mosquito (*Aedes aegypti*)

malaria mosquitoes, e.g. (*Anopheles gambiae*, *Anopheles Sstephensi*, *Anopheles funestus*, *Anopheles arabiensis*, *Anopheles dirus*, *Anopheles albimanus*)

Other mosquito vectors of disease, e.g. (*Culex pipiens*, *Culex quinquefasciatus*)

Japanese beetle (*Popilla japonica*)

White-fringed beetle (*Graphognatus spp.*)

Boll weevil (*Anthonomous grandis*)

Corn Rootworms: Western (*Diabrotica virgifera virgifera*), Northern (*Diabrotica barberi*), Southern (*Diabrotica undecimpunctata howardi*) and Mexican (*D. virgifera zeae*)

Red Palm Weevil (*Rhynchophorus ferrugineus*)

Sweet potato Weevils (*Cylas formicarius*, *eucepes postfasciatus*)

Colorado beetle (*Leptinotarsa decemlineata*)

Pine Shoot Beetle (*Tomicus piniperda*)

Mahogany Shoot Borer (*Hypsipyla robusta*)

Flour Beetle (*Tribolium confusum*)

Pea Weevil (*Bruchus pisorum*)

Grain borers (*Prostephanus truncatus*, *Rhyzopertha dominica*)

Flat grain beetle (*Cryptolestes ferrugineus*)

Granary & Rice Weevils (*Cytophilus spp.*)

Citrus blackfly (*Aleurocanthus woglumi*)

Oriental fruit fly (*Dacus dorsalis*)

Olive fruit fly (*Dacus oleae*)

tropical fruit fly (*Dacus cucurbitae*, *Dacus zonatus*)

Mediterranean fruit fly (*Ceratitis capitata*)

Natal fruit fly (*Ceratitis rosa*)

Cherry fruit fly (*Rhagoletis cerasi*)

Queensland fruit fly (*Bactrocera tryoni*)

Caribbean fruit fly (*Anastrepha suspensa*)

Carambola Fruit Fly (*Bactrocera carambolae*)

Mexican Fruit Fly (*Anastrepha ludens*)

Onion Fly (*Delia antiqua*)

Mushroom flies (*Lycoriella mali*, *Lycoriella auripila* & *Megaselia spp.*)

Other fruit flies (Tephritidae)

Gypsy moth (*Lymantria dispar*)

Codling moth (*Cydia pomonella*)

Brown tail moth (*Euproctis chrysorrhoea*)

rice stem borer (*Tryporyza incertulas*)

Pink Bollworm (*Pectinophora gossypiella*)

Navel Orangeworm (*Amyelois transitella*)

Peach twig worm (*Anarsia lineatella*)

Painted Apple Moth (*Teia anartoides*)

Corn Earworm (*Helicoverpa armigera*, *Helicoverpa zea*)

Tobacco Budworm (*Heliothis virescens* - and other Heliothines)

Tobacco Hornworm (*Maduca sexta*)

Potato Tuber Moth (*Phthorimaea operclella*)

Date Moth (*Ectomyelois ceratoniae*)

Oriental Fruit Moth (*Grapholita molesta*)

Diamondback moth (*Plutella xylostella*)

Indian Meal Moth (*Plodia interpunctella*)

Greenhouse Whiteflies (e.g. *Bemisia tabaci*, *Trialeurodes vaporarum*)

Cattle Fever tick (*Boophilus microplus*) and other ticks of veterinary importance

and

Psocids (*Liposcelis* spp.).

17. A method according to claim 16, wherein the targeted population is a species of mosquito capable of transmitting malaria.

18. A method according to claim 16, wherein the targeted population is medfly (*Ceratitis capitata*).

19. A method according to any preceding claim, wherein the genetic trait to be inhibited or reversed comprises multiple loci.

20. A method according to any preceding claim, for the inhibition or reversal of multiple genetic traits.

21. A method according to any preceding claim, wherein the genetic trait is non wild type, and the sexually compatible individuals are wild type for the said genetic trait.

22. A method according to any preceding claim, wherein the genetic trait to be inhibited or reversed is resistance to a pesticide.

23. A method according to claim 22, comprising treatment with the pesticide and providing refugia to permit survival of non resistant members of the population.

24. A method according to claim 22 or 23, wherein the pesticide is expressed by a food crop.
25. A method according to claim 24, wherein the pesticide is *Bacillus thuringiensis* toxin expressed by the food crop.
26. A method according to claim 24 or 25, wherein the refugia are provided by individual plants forming the food crop.
27. A method according to any preceding claim, wherein the numbers of individuals introduced are so calculated as to inhibit a trait developing in a population substantially free from the trait.
28. A method according to any preceding claim, wherein the numbers of individuals introduced are 10% or less of the population.
29. A method according to any of claims 1 to 26, wherein the numbers of individuals introduced are so calculated as to reverse a trait already present in a population.
30. A method according to any of claims 1 to 26, or 29, wherein the numbers of individuals introduced are at least equal to the numbers of individuals in the population.
31. A method according to any preceding claim, wherein the counterpart in the introduced individuals confers a further trait on heterozygotes and/or homozygotes therefor.
32. A method according to claim 31, wherein the further trait is selected from the group consisting of: susceptibility to a toxin; inability to diapause; and refractoriness to a pathogen.